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Ceramic nanotubes for polymer composites with stable anticorrosion properties

Fakhrullin R., Tursunbayeva A., Portnov V., L'vov Y.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2014, Pleiades Publishing, Inc. The use of natural halloysite clay tubes 50 nm in diameter as nanocontainers for loading, storing, and slowly releasing organic corrosion inhibitors is described. Loaded nanotubes can be mixed well with many polymers and dyes in amounts of 5–10 wt % to form a ceramic framework (which increases the strength of halloysite composites by 30–50%), increase the adhesion of these coatings to metals, and allow for the slow release of corrosion inhibitors in defects of coatings. A significant improvement of protective anticorrosion properties of polyacryl and polyurethane coatings containing ceramic nanotubes loaded with benzotriazole and hydroxyquinoline is demonstrated.

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